ATTACHMENT OO

United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Pete Wilson
Governor

Cal/EPA

June 5, 1997

Mr. Phillip J. Carroll
President, Chief Executive Officer & Director
Shell Oil Company
900 Louisiana
One Shell Plaza
Houston, TX 77002

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P 361 214 208

METHYL TERTIARY BUTYL ETHER (MTBE) POLLUTION INVESTIGATION OF THE CHARNOCK SUBBASIN (FILE NUMBER 96-042).
SHELL SERVICE STATION #204-1944-0100, 3801 SEPULVEDA BLVD., CULVER CITY.
SHELL SERVICE STATION, 10815 NATIONAL BLVD., LOS ANGELES.
SHELL SERVICE STATION, 3500 CENTINELA AVENUE, LOS ANGELES.

This letter is being sent jointly by the Los Angeles Regional Water Quality Control Board (Regional Board) and the United States Environmental Protection Agency (EPA). This letter is directed to representatives of potentially responsible parties who are believed to have owned or operated gasoline storage tanks and/or gasoline transmission pipelines within the suspected source area of the methyl tertiary butyl ether (MTBE) contamination found in the Charnock drinking water well field in west Los Angeles (See Attachment A, Distribution List). Most of you have previously been contacted by the Regional Board and advised of the MTBE contamination in the Charnock well field. We are writing to invite you and/or your representatives to a meeting on Thursday June 26, 1997 with the EPA and the Regional Board. The purpose of the meeting will be to review your obligations with respect to this problem and to request your input on important issues which may affect your obligations. We strongly encourage you to attend. This is a serious and complex matter that requires your immediate attention.

History of the Problem

In early 1996, the City of Santa Monica discovered MTBE in two of their drinking water well fields, Charnock and Arcadia, both of which are located in west Los Angeles. Both the City of Santa Monica and the Southern California Water Company have ceased operation of their well fields in the Charnock Subbasin and are purchasing replacement water in response to this contamination, which constitutes a condition of pollution. The Regional Board identified possible sources of the contamination within an approximately one mile radius of the City of Santa Monica well field. After further investigation and analysis, we have determined that this area is an appropriate starting point for detailed investigation of potential sources.

Between July and September 1996, the Regional Board contacted parties with either ownership or operating responsibility for potential sources in this area. Some parties have responded to the Regional Board by denying legal responsibility. Others have provided requested information and workplans and/or conducted field work. While a significant amount of area wide and site specific field work has been

conducted, substantial source investigation, subbasin investigation and remediation planning remains to be done.

Agency Plans and Schedule

Given the urgency of remediating both the sources of the contamination and returning the well field to use as a drinking water source, EPA and the Regional Board have decided to work together with the City of Santa Monica, the Southern California Water Company and all potentially responsible parties (PRPs) in a coordinated effort. A copy of the Memorandum of Understanding (MOU) between EPA and the Regional Board is provided as Attachment B.

During the next several months we will work intensively with each of you to clarify your responsibility, assist you in planning and completing all necessary source investigations and determine your responsibility for participating in the subbasin characterization and remediation. Prior to the meeting which is planned for June 26, 1997, we will forward you three additional documents which will require your prompt attention (a) a flow chart reflecting "participation criteria," (b) an information request letter, and (c) a workplan request along with a model scope of work.

The agencies plan to require all parties to complete their field work by a date yet to be determined in the fall of 1997. The agencies presently intend to determine based on the information submitted by the deadline, which facilities will be the focus of further enforcement actions. Based on the information available at that time, each party who is determined to remain a priority PRP will be required to either enter into a Consent Decree or receive an enforcement order to meet their obligations with respect to the Charnock subbasin contamination. All parties who have not completed the required field work, will be considered priority PRPs and will be subject to the joint agency enforcement action. The agencies intend to provide the parties with a draft Consent Decree in July, 1997. The agencies presently intend to jointly utilize their respective authorities under state and federal law, including, but not necessarily limited to, the California Water Code Section 13000, et seq. (Porter-Cologne Act), the Safe Drinking Water Act, 42 U.S.C. Section 300f, et seq., (See Public Health Service Act, Section 1431, 42 U.S.C. Section 300i) and the Resource Conservation and Recovery Act, as amended, 42 U.S.C. Section 6900, et seq., Section 7003.

Time and Location of the Meeting

As noted above, the meeting to review agency plans and receive parties' questions and input will be held on Thursday June 26, 1997, and will begin at 1:00 p.m. The meeting will be held in Santa Monica, California at:

The Holiday Inn
530 Pico Boulevard
Santa Monica, California
(310) 399-9344

Agenda for the Meeting

The meeting will cover the following items:

a. Background

b. Current Information About MTBE Issue in the Charnock Subbasin

c. Review of Scope of Work and Participation Material

Contacts At the Regulatory Agencies

Please feel free to contact the following individuals both before and after the June 26, 1997 meeting to discuss any questions you may have. We request that your legal representatives call the attorney contacts only.

Regional Board Contacts

Project Manager:	David Bacharowski	(213) 266-7546 (phone); (213) 266-7600 (fax)
Attorney:	Jorge Leon	(916) 657-2428 (phone); (916) 653-0428 (fax)

EPA Contacts

Project Manager:	Steven Linder, P.E.	(415) 744-2036 (phone); (415) 744-1044 (fax)
Attorney:	Laurie Williams	(415) 744-1387 (phone); (415) 744-1041 (fax)

We look forward to working with you to determine your responsibility and resolve this environmental problem. Thank you for your attention to this matter.

DENNIS A. DICKERSON
Executive Officer
California Regional Water Quality
Control Board, Los Angeles Region

HT for Julie Anderson
JULIE ANDERSON
Hazardous Waste Division Director
U.S. Environmental Protection Agency

Enclosures

cc: Regional Board Members
Felicia Marcus, Regional Adminstrator, EPA Region 9
Jorge Leon, Office of Chief Counsel, SWRCB
David Spath, Division of Drinking Water and Environmental Management, State Department of Health Services
Gary Yamamoto, Drinking Water Field Operations, State Dept. of Health Services

cc (continued):

Joseph Lawrence, Assistant City Attorney, City of Santa Monica
Barry Groveman, Special Environmental Counsel for City of Santa Monica
Craig Perkins, Environmental & Public Works, City of Santa Monica
Brian Johnson, Underground Storage Tank Program, City of Santa Monica
Rey Rodriguez, Utilities Engineer, City of Santa Monica
Denise Kruger, Southern California Water Company
Rob Saperstein, Counsel for Southern California Water Company
Keith Pritsker, City Attorney's Office, City of Los Angeles
Michael Schwennesen, Ecology and Environment, Inc.
Walter Crone, Ninyo & Moore
Carl Sjoberg, Environmental Programs Division, Los Angeles Co. Department of Public Works
Cpt. Jesse Pasos, Underground Storage Tank Program, City of Los Angeles Fire Dept.
Angelo Bellomo, Environmental Strategies Corporation
Gino Bianchi-Mosquera, Geomatrix Consultants, Inc.
Brad Boschetto

ATTACHMENT PP

United States Environmental
Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Los Angeles Regional Water
Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Pete Wilson
Governor

Cal/EPA

June 19, 1997

Mr. Phillip J. Carroll
President, Chief Executive Officer & Director
Shell Oil Company
900 Louisiana
One Shell Plaza
Houston, TX 77002

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P 551 840 937

METHYL TERTIARY BUTYL ETHER POLLUTION INVESTIGATION OF THE CHARNOCK SUB-BASIN – INFORMATION REQUEST AND MODEL SITE SPECIFIC WORKPLAN FOR ASSESSMENT OF POTENTIAL RESPONSIBLE PARTY SITES (FILE NUMBER 96-042).
SHELL SERVICE STATION #204-1944-0100, 3801 SEPULVEDA BLVD., CULVER CITY.
SHELL SERVICE STATION, 10815 NATIONAL BLVD., LOS ANGELES.
SHELL SERVICE STATION, 3500 CENTINELA AVENUE, LOS ANGELES.

This letter is a follow-up to our June 5, 1997, letter to you regarding the Charnock Sub-Basin Methyl Tertiary Butyl Ether (MTBE) Investigation. You are receiving this letter because, based on existing information, the Los Angeles Regional Water Quality Control Board (Regional Board) and the United States Environmental Protection Agency (EPA) "collectively the agencies," have determined that you are required to submit additional information and perform field work, as described in greater detail below.

The June 5, 1997, letter was sent jointly by the Regional Board and EPA to representatives of potentially responsible parties (PRPs) who are believed to have owned and/or operated gasoline storage tanks within the suspected source area of MTBE contamination found in the Charnock drinking water well field in the Mar Vista area of Los Angeles (See attached Figure 1 - MTBE Pollution Charnock Sub-Basin Investigation Area). The June 5, 1997, letter provided background information and announced a June 26, 1997, meeting in Santa Monica, California. This letter contains (a) a flowchart describing the agencies "participation criteria," (b) an information request, and (c) a workplan request. As explained in greater detail below, you are required to provide both the information and workplan by **July 25, 1997.**

(a) Flowchart

A copy of a flowchart entitled "Charnock MTBE Participation Flowchart" is provided as Appendix A to this letter. The flowchart provides an overview of the agencies' plan regarding priority PRPs.

(b) Information Requests

You are required to provide the information contained in Appendix B. Even if you have already provided some of the information in response to a prior Regional Board information request, you must resubmit that information in responding to this request.

(c) Required Workplan

You are required to submit a workplan as explained in greater detail below. All workplans must conform with the requirements contained in Appendices C through C-4.

Enclosed as Appendices C, C-1, C-2, C-3, and C-3.1, are requirements for site specific soil and groundwater investigation. These requirements are being provided by the agencies to ensure a rapid and consistent approach for evaluating sites which are potentially responsible for the Charnock MTBE contamination, which constitutes a condition of pollution. As explained in our June 5, 1997, letter, the initial investigation will focus on potential sources within approximately one mile of the Charnock well field which have or may have managed gasoline containing MTBE in underground storage tanks. (See attached Table 1 - Potential Sources Within the Charnock Sub-Basin Investigation Area).

Our files indicate that the station or facility for which you have ownership and/or operator responsibility has had a known or documented release of gasoline since January 1, 1980, which contained or may have contained MTBE. As a result you are required to submit a workplan for conducting a soil and groundwater investigation in accordance with the enclosed requirements (Appendix C, C-1, C-2, C-3, and C-3.1).

Fate and Transport of MTBE

MTBE's usage within the greater Los Angeles area, together with its physical and chemical properties require special consideration by PRPs during the planning and implementation of site specific investigations. MTBE does not readily adsorb onto soil particles. It is highly soluble in water, readily partitions into the aqueous phase and may "detach" from the dissolved petroleum hydrocarbon plume. MTBE does not readily biodegrade. As a result, MTBE may leave the initial site of the release and travel significant distances.

Because of MTBE's fate and transport characteristics, the absence of MTBE in soil and or groundwater data at PRP sites where petroleum hydrocarbons are present, is not definitive evidence that MTBE was not discharged at the site. Once MTBE is dissolved in groundwater, MTBE generally migrates at velocities approaching the local groundwater flow velocity. MTBE is approximately 40 times more soluble than benzene in groundwater. We enclosed, as Appendix E, a copy of a recent CAL/EPA Briefing Paper on MTBE for your use and reference.

Submission of Information and Workplan

As an owner or operator of a potential source of the MTBE in the Charnock wellfield, you are required to provide the information and workplan for your station or facility, even if you believe that you have or may have a defense to liability for the investigation and remediation of the Charnock Sub-Basin MTBE contamination. The MTBE contamination has been determined to constitute a condition of pollution and an imminent and substantial endangerment to public health and the environment. An immediate investigation of possible sources is critical to both restoration of this drinking water resource and a determination of financial responsibility for its investigation and remediation.

Two copies of your responses to the information required in Appendix B and your workplan prepared in accordance with Appendices C through C-4 should be sent to:

David Bacharowski, Project Manager
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Steven Linder, Project Manager (WST-5)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Rey Rodriguez
Utilities Division
City of Santa Monica
1212 5th Street
Santa Monica, CA 90401

Denise Kruger
Southern California Water Company
P.O. Box 9016
San Dimas, CA 91773

Authorities

This request is made pursuant to the following authorities: Porter-Cologne Water Quality Control Act, Section 13267, Safe Drinking Water Act Section 1431, 42 U.S.C. 300i, and Resource Conservation and Recovery Act Section 7003, 42 U.S.C. Section 6973. Failure to provide complete and truthful responses to the enclosed information requests may result in penalties as provided in those Acts. As noted above, the deadline for providing both the required information and the required workplan is **July 25, 1997.**

June 26, 1997 Meeting

We continue to encourage you and/or your representative(s) to attend the meeting to be held at 1:00 P.M., Thursday June 26, 1997, at 530 Pico Boulevard, Santa Monica, California. At that meeting we will review your obligations with respect to the Charnock Sub-Basin MTBE Investigation and request your input on important issues which may affect your obligations.

Questions

If you have questions about any of the items required, either before or after the June 26, 1997, meeting, please contact the following individuals at the Regional Board and EPA. We request that your legal counsel contact only the attorney contacts for our agencies.

Regional Board Contacts:

David Bacharowski, Project Manager	(213) 266-7546 (phone)	(213) 266-7600 (fax)
Jorge Leon, Esq., Attorney	(916) 657-2428 (phone)	(916) 653-0428 (fax)

EPA Contacts:

Steven Linder, Project Manager	(415) 744-2036 (phone)	(415) 744-1044 (fax)
Laurie Williams, Esq., Attorney	(415) 744-1387 (phone)	(415) 744-1041 (fax)

We look forward to working with you. Thank you for your prompt attention to this matter.

Dennis A. Dickerson

DENNIS A. DICKERSON
Executive Officer
California Regional Water Quality
Control Board, Los Angeles Region

HT for Julie Anderson

JULIE ANDERSON
Division Director
Waste Management Division
U.S. Environmental Protection Agency

Enclosures

cc: Regional Board Members
Felicia Marcus, Regional Administrator, EPA Region 9
Jorge Leon, Office of Chief Counsel, SWRCB
David Spath, Division of Drinking Water and Environmental Management, State Department of Health Services
Gary Yamamoto, Drinking Water Field Operations, State Dept. of Health Services
Carl Sjoberg, Environmental Programs Division, Los Angeles Co. Department of Public Works
Cpt. Dennis Wilcox, Underground Storage Tank Program, City of Los Angeles Fire Dept.
Keith Pritsker, City Attorney's Office, City of Los Angeles
Joseph Lawrence, Assistant City Attorney, City of Santa Monica
Barry Groveman, Special Environmental Counsel for City of Santa Monica
Craig Perkins, Environmental & Public Works, City of Santa Monica
Brian Johnson, Underground Storage Tank Program, City of Santa Monica
Rey Rodriguez, Utilities Engineer, City of Santa Monica
Denise Kruger, Southern California Water Company
Rob Saperstein, Counsel for Southern California Water Company
Michael Schwennesen, Ecology and Environment, Inc.
Walter Crone, Ninyo & Moore
Angelo Bellomo, Environmental Strategies Corporation
Gino Bianchi-Mosquera, Geomatrix Consultants, Inc.
Brad Boschetto

ATTACHMENT QQ

Shell Oil Products Company

P.O. Box 25370
Santa Ana, CA 92799

3611 S. Harbor Blvd., Suite 160
Santa Ana, CA 92704

FAX COVER SHEET

July 24, 1997

To: Mr. David Bacharowski, Los Angeles Regional Water Quality Control Board, 213-266-7600
✓ Mr. Steven Linder, United States Environmental Protection Agency, 415-744-1044
Mr. Rey Rodriguez, City of Santa Monica, 310-393-6697
Ms. Denise Kruger, Southern California Water Company, 909-394-0827

c: KC Gillmore, Shell
PJ Pugnale, Shell
Al Franchina, Shell

Re: **METHYL TERTIARY BUTYL ETHER INVESTIGATION OF THE CHARNOCK SUB-BASIN – APPENDIX B INFORMATION REQUEST.**
SHELL SERVICE STATION, 3801 SEPULVEDA BLVD., CULVER CITY.
SHELL SERVICE STATION, 10815 NATIONAL BLVD., LOS ANGELES.
SHELL SERVICE STATION, 3500 CENTINELA AVENUE, LOS ANGELES.

Pages including cover: 3

Dear Messrs. Bacharowski, Linder, and Rodriguez and Ms. Kruger:

Attached is a copy of the Shell Oil Products Company's Information submittal letter (without attachments) per the above-referenced Information Request. An original copy of this letter and the requested information will be delivered to your address via courier on Friday, July 25, 1997. The letter is inside Box #1.

If there are any questions regarding this fax or the information submission, please do not hesitate to contact me at (714) 427-3431.

Very truly yours,

H. Brad Boschetto
Sr. Hydrogeologist, Western Region
(714) 427-3431, FAX (714) 427-3470
email: hbboschetto@shellus.com

Shell Oil Products Company

P.O. Box 25370
Santa Ana, CA 92799

3611 S. Harbor Blvd., Suite 160
Santa Ana, CA 92704

July 24, 1997

Mr. David Bacharowski, Project Manager
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Mr. Steven Linder, Project Manager (WST-5)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Mr. Rey Rodriguez
Utilities Division
City of Santa Monica
1212 5th Street
Santa Monica, CA 90401

Ms. Denise Kruger
Southern California Water Company
130 E. Foothill Blvd.
P.O. Box 9016
San Dimas, CA 91773

Re: METHYL TERTIARY BUTYL ETHER INVESTIGATION OF THE CHARNOCK SUB-BASIN -- APPENDIX B INFORMATION REQUEST.
SHELL SERVICE STATION, 3801 SEPULVEDA BLVD., CULVER CITY.
SHELL SERVICE STATION, 10815 NATIONAL BLVD., LOS ANGELES.
SHELL SERVICE STATION, 3500 CENTINELA AVENUE, LOS ANGELES.

Dear Messrs. Bacharowski, Linder, and Rodriguez and Ms. Kruger:

Shell Oil Products Company ("Shell") hereby submits its documents in regard to the above-referenced information Request in the June 19, 1997 letter from USEPA Region 9 and the Los Angeles Regional Water Quality Control Board. This information submitted is indexed in Attachments A&B. A copy of the index is also included in Box #1. The workplan for the Shell Service Station at 3500 Centinela was mailed by overnight courier under separate cover.

While Shell has made every effort to respond in good faith, due to the breadth of the information requested, it is possible additional responsive documents may be located in the future. Should this happen, Shell will supplement its response in a timely manner.

Additionally, Shell believes that a small number of these documents are privileged and confidential attorney work product or contain confidential business information. Where appropriate, these claims are noted on the document index. Shell would be willing to discuss possible disclosure of this information pursuant to a protective order or similar protection afforded proprietary/trade secret confidential business information.

On the other hand, a few documents although initially labeled "confidential" are no longer confidential. Shell has also noted these documents on the enclosed document index.

If there are any questions regarding this submission, please do not hesitate to contact me at (714) 427-3431.

Very truly yours,

H. B. Boschetto
Sr. Hydrogeologist, Western Region Retail
(714) 427-3431 FAX 3470

Attachments

c (w/attachments only): KC Gillmore, Shell
PJ Pugnale, Shell
Al Franchina, Shell

c: site file

SUMMARY OF SITE INVESTIGATIONS AND ACTIVITIES
SHELL OIL PRODUCTS COMPANY STATION
3801 SEPULVEDA BOULEVARD (at Venice Blvd.)
CULVER CITY, CALIFORNIA

LOCATION AND LAND USE

The Shell site is located at the south corner of the intersection of Sepulveda and Venice Boulevards in Culver City, California (Figures 1 and 2). An active Mobil Business Resources Corporation service station (Mobil site) is located at the east corner of the intersection; an active Chevron service station (Chevron site) is at the west corner; and a Phillips 66 service station was formerly located at the northeast corner. A strip mall is currently located at the north corner. Other businesses (Maurice Joffe Tax Service and various auto repair shops) are immediately southwest of the Shell site. The surrounding land use is mixed commercial and residential. The San Diego (405) Freeway is approximately 150 feet west of the Shell site.

PHYSIOGRAPHY AND TOPOGRAPHY

The Shell site is located in the Ballona Gap area of the Coastal Plain of Los Angeles County at an elevation of approximately 60 feet above mean sea level. Surface topography in the site area is generally flat with a slight gradient to the southeast. A series of low hills, part of the Cheviot Hills, are approximately 1,500 feet to the north and northwest. The southwest-flowing Ballona Creek, confined within a concrete channel, is approximately 7,500 feet to the southeast. The Baldwin Hills are approximately 2 miles to the southeast.

GEOLOGIC AND HYDROGEOLOGIC SETTING

The Shell site is within the Charnock subbasin of the Santa Monica Groundwater Basin. The northwest-trending Charnock Fault is approximately 3,000 feet to the southwest and the parallel Overland Avenue Fault is approximately 3,700 feet to the northeast (Poland, Garrett and Sinnott, 1959; California Department of Water Resources [CDWR], 1961).

The Shell site is underlain by Recent alluvial sediments and Pleistocene alluvial and marine sediments of the Lakewood and San Pedro Formations (CDWR, 1961; Table 1).

The competency and lateral distribution of fine-grained sediments underlying the uppermost groundwater are not well defined at this time. Fine-grained sediments are found at a shallower depth in the northeastern portion of the Shell site. On the southwest portion of the property and off site to the southwest, fine-grained sediments are found at deeper depths and are thinner, where present.

The uppermost groundwater has been measured at approximately 87 to 109 feet below ground surface (1993 to present). Specifically, groundwater has been shallowest in the northeastern part of the site. Groundwater has been consistently deeper in the west and southwest parts of the site and off-site to the southwest. The direction of groundwater flow has generally been to the southwest (Fugro, 1996a and 1996b).

Based on published stratigraphic information, the uppermost groundwater is interpreted to be within the upper part of the San Pedro Formation. This saturated zone is believed to be below the currently dewatered Ballona aquifer and above the Silverado aquifer (Poland, Garrett, and Sinnott, 1959; CDWR, 1961; Table 1).

ENVIRONMENTAL ACTIVITIES AT ADJACENT SITES

Mobil Site

The Mobil site, at 3800 Sepulveda Boulevard, is directly upgradient of the Shell site. A number of assessments were performed at the Mobil site from March 1987 through September 1989 (Fischer, 1996). Since 1993, groundwater has been measured at depths of 80 to 105 feet. During this period, the direction of groundwater flow has generally been to the southwest directly towards the Shell site (TRAK Environmental Group, 1996).

Prior to May 1990, the Mobil site maintained three fiberglass gasoline USTs in the center of the site and one waste-oil UST in the east corner of the site (Emcon, 1990a). The USTs and associated dispensers and piping were removed in May 1990 (Emcon, 1990a). After the original USTs were removed, four 10,000-gallon double-wall fiberglass USTs were installed on the northwest side of the site. The Mobil site was also reconstructed with three dispenser islands. During UST removal activities, fuel hydrocarbons were detected beneath the USTs and dispenser islands (Emcon, 1990a).

Between 1990 and 1994, one soil boring, one soil vapor extraction (SVE) well, and eleven groundwater monitoring wells were installed on and off site (Emcon, 1990b and Remedial Management Corporation, 1991a, 1991b, and 1994). Total petroleum hydrocarbons as gasoline (TPH-G) was detected in soil to a depth of 80 feet. Maximum TPH-G concentration detected was 5,820 milligrams per kilogram (mg/kg) at a depth of 60 feet (Emcon, 1990b).

In August 1990, 14.82 feet of separate-phase hydrocarbon was measured in Well B-10 located near the center of the site. (Emcon 1990b). Separate-phase hydrocarbons have been measured in Well RMC-3, located in Sepulveda Boulevard directly up-gradient of and adjacent to the Shell site, since 1993. In September 1996, the separate-phase hydrocarbon thickness in Well RMC-3 was 0.58 foot (TRAK Environmental Group, 1996).

Chevron Site

A work plan for subsurface assessment of the Chevron site at 3775 Sepulveda Boulevard, directly northwest of the Shell site, has been prepared by Bechtel Environmental Inc. The focus of the proposed Chevron assessment is the uppermost groundwater zone. Results of the Chevron assessment will be integrated with results of the proposed Shell site assessment and the Regional Assessment to evaluate the hydrogeology and quality of the uppermost and deeper groundwater in the area of the Shell and Chevron sites.

ENVIRONMENTAL ACTIVITIES AT THE SHELL SITE

The following subsections describe previous environmental assessment and remedial activities at the Shell site and the adjacent property to the southwest.

Leak Detection Investigation - September 1988

In September 1988, WPI conducted a Leak Detection Investigation, which included the drilling and sampling of six borings (B-1 through B-6) in the vicinity of the USTs, product piping and dispenser islands. Three borings were drilled to 10 feet below ground surface (B-3, B-4 and B-5), two to 20 feet (B-2 and B-6), and one to 40 feet (B-1). Petroleum hydrocarbons were detected in one soil sample, collected at 5 feet in Boring B-3. In that sample, TPH-G was detected at 1 mg/kg, but benzene, toluene, ethylbenzene and total xylenes (BTEX) were not detected (WPI, 1988).

UST Removal and Replacement - June 1992

In June 1992, four 12,000-gallon single-walled fiberglass USTs were removed from the station. Three of the tanks, used to store various grades of gasoline, were originally located north of the dispenser islands. The fourth tank, used to store diesel fuel, was located south of the dispenser islands. During tank removal, two separate excavations were created. Soil samples were collected from beneath the USTs and associated piping and then analyzed for TPH-G, TPH as diesel fuel (TPH-D), and BTEX. Petroleum hydrocarbons were detected in soil beneath the USTs and dispenser islands, with the highest concentrations detected beneath the west end of the southernmost gasoline tank (TPH-G at 1,987 mg/kg and benzene at 17 mg/kg) and beneath the north end of the westernmost dispenser island (TPH-G at 2,215 mg/kg and benzene at 18 mg/kg). TPH-D was not detected in soil from beneath the diesel-fuel tank or from beneath the diesel-fuel (south) dispenser on the westernmost dispenser island (Fugro-McClelland [West], Inc. [Fugro], 1992).

Five, 12,000-gallon double-walled fiberglass gasoline USTs were reinstalled within the enlarged gasoline tank excavation. The dispensers were also replaced. Vapor extraction piping was installed within both UST excavations. Hydrocarbon-impacted soil was placed within the former diesel-fuel tank excavation for later vapor extraction.

Preliminary Site Assessment - August 1993

In August 1993, three soil borings were drilled and sampled (Fugro, 1993). One boring was completed as a SVE well (Well VE-3) and the remaining borings were completed as triple-nested SVE/groundwater monitoring wells (Wells MW-1/VE-1 and MW-2/VE-2). Separate-phase hydrocarbons were detected on groundwater in Well MW-2 and dissolved-phase hydrocarbons were detected in groundwater from Well MW-1.

Supplemental Site Assessment - April 1994

In April 1994, seven additional borings were drilled and sampled including four on the adjacent property to the southwest (Fugro, 1994a). Wells VE-4 and VE-5 were completed as double-nested SVE wells (into groundwater); Wells MW-4/VE-6 and MW-5/VE-7 were completed as double-nested SVE/groundwater wells; Well VE-8 was completed as a triple-nested SVE well (into groundwater); Wells VE-9A and VE-9B were completed as adjacent SVE wells, with Well VE-9A completed into groundwater; and Well MW-3 was completed as a groundwater monitoring well.

The maximum hydrocarbon concentrations in soil were detected at approximately 100 feet, at the top of the groundwater zone, in Well MW-5/VE-7 (TPH-G at 7,514 mg/kg) and Well VE-8 (TPH-G at 10,169 mg/kg). Separate-phase hydrocarbons were detected on groundwater in Well MW-5/VE-7 and dissolved hydrocarbons were detected in groundwater from the remaining wells (except Well VE-8, which was not sampled due to an obstruction).

Separate-Phase Hydrocarbon Recovery - September 1993 to Present

Manual separate-phase hydrocarbon recovery has been conducted at the site by WPI since September 1993. Separate-phase hydrocarbon has been found in Wells MW-1/ VE-1, MW-2/VE-2, MW-4/VE-6, MW-5/VE-7 and VE-5.

In August 1995, Fugro placed absorbent wicks in wells with separate-phase hydrocarbon. An automated separate-phase hydrocarbon recovery system, installed in Wells MW-4/VE-6 and MW-5/VE-7, began operation in May 1996. Fugro installed passive skimmers in Wells MW-2 and VE-5 in September 1996.

Measured separate-phase hydrocarbon thicknesses in Wells MW-1/VE-1, MW-2/VE-2, MW-4/VE-6, MW-5/VE-7 and VE-5 have decreased from a maximum of 10.05 feet (Well MW-4/VE-6 on May 6, 1996) to zero feet (Well MW-4/VE-6 on March 14, 1997). A total of approximately 1,1,424 gallons of separate-phase hydrocarbon has been removed to date.

Soil Vapor Extraction - October 1994 to Present

In October 1994, Fugro performed SVE testing at the Shell site. The nested SVE wells, which are screened in shallow, intermediate and deep soil zones based on the subsurface stratigraphy, were tested. The series of tests indicated that SVE was feasible for remediating petroleum hydrocarbons from within sandy soils. The test results indicated that the estimated horizontal

SVE radii of vacuum influence were at least 20 feet for soil at 20 to 40 feet below ground surface, 50 feet for soil at 40 to 60 feet, and 75 feet for soil at 60 to 110 feet (Fugro West, 1994b).

SVE operations began in August 1995 using various internal combustion engines (VR Systems Model V-3 and V-4), operated under South Coast Air Quality Management District permits. Variable combinations of SVE wells have also been used (Fugro West, 1996a and 1996b). In May 1997 an automated product recovery system (Airex Model Katox 100 Catalytic Oxidizer) was installed. Through April 1997, an estimated 13,996 gallons of gasoline-equivalent hydrocarbons has been removed through vapor extraction.

Ground Water Monitoring - September 1993 to Present

Ground water monitoring began in September, 1993, for monitoring wells MW-1 and MW-2. Monitoring activities commenced on subsequent wells as constructed. Currently, ground water monitoring is conducted on a quarterly basis, with samples being chemically analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, total xylenes (BTEX), and tetra-ethyl lead.

CURRENT PROJECT STATUS

WPI is currently conducting further site assessment activities. Work is being conducted in accordance with the report entitled *Assessment Work Plan*, dated February 21, 1997, and subsequent addenda.

REFERENCES

California Department of Water Resources, 1961, Planned Utilization of the Ground Water Basins of the Coastal Plains of Los Angeles County, Appendix A, Ground Water Geology, Bulletin No. 104.

Emcon Associates, 1990a, Tank Closure Report: Service Station No. 11-FX5, 3800 South Sepulveda Boulevard, Culver City, California: Report prepared for Mobil Oil Corporation, September 21, 1990.

Emcon Associates, 1990b, Site Assessment Report, Mobil Oil Corporation, Service Station No. 11-FX5, Culver City, California: Report prepared for Mobil Oil Corporation, September 1990 (date not available).

Fischer, K. W., 1996, Letter to Robert P. Ghirelli, California Regional Water Quality Control Board, Los Angeles Region, Re: MTBE Pollution Investigation - Charnock Wellfield (File No. 96-042): Field Engineering Manager, Mobil Business Resources Corporation, June 26, 1996.

Fugro-McClelland (West), Inc., 1992, Tank Removal Report Recommendations, 3801 Sepulveda Boulevard, Culver City, California: Report prepared for Shell Oil Company, August 1992.

Fugro West, Inc., 1994a, Supplemental Site Assessment Report, Shell Service Station, 3801 Sepulveda Boulevard, Culver City California: Report prepared for Shell Oil Company: August 1994

Fugro West, Inc., 1994b, Soil Vapor Extraction Pilot Test, Interpretation Report, Shell Service Station, 3801 Sepulveda Boulevard, Culver City California: Report prepared for Shell Oil Company: September 1994.

Fugro West, Inc., 1996a, Annual First Quarter Report, Shell Service Station, 3801 Sepulveda Boulevard, Culver City California: Report prepared for Shell Oil Products Company.

Fugro West, Inc., 1996b, Third Quarter Report, Shell Service Station, 3801 Sepulveda Boulevard, Culver City California: Report prepared for Shell Oil Products Company, November 1996.

Poland, J.F., A.A. Garrett, and A. Sinnott, 1959, Geology, Hydrology, and Chemical Character of Ground Waters in the Torrance-Santa Monica area, California, USGS Water-Supply Paper 1461.

Remedial Management Corporation, 1991a, Site Assessment Report for Mobil Station 11-FX5, 3800 South Sepulveda Boulevard, Culver, California: Report prepared for Mobil Oil Corporation, December 18, 1991.

Remedial Management Corporation, 1991b, Site Assessment Report for Mobil Station 11-FX5, 3800 South Sepulveda Boulevard, Culver, California: Report prepared for Mobil Oil Corporation, March 12, 1991.

Remedial Management Corporation, 1991c, Site Assessment Report for Mobil Service Station 11-FX5, 3800 South Sepulveda Boulevard, Culver, California: Report prepared for Mobil Oil Corporation, August 22, 1994.

TRAK Environmental Group, 1996, Third Quarter 1996 Progress Report, Mobil Station 11-FX5, 3800 Sepulveda Boulevard, Culver City, California: Report prepared for Mobil Oil Corporation.

Wayne Perry Construction, Inc., 1988, Leak Detection Investigation, Shell Station (Loc. Wic. 204-1944-0100), 3801 Sepulveda Boulevard/Venice, Culver City, CA: Report prepared for Shell Oil Company, September 1988.

Shell Oil Products Company
Summary of UST Integrity Tests

REQUEST # 16
3801 Sepulveda / Venice
Culver City, CA 90320
204 - 1944 - 0100

00322

Date of Test	Type of Test	Sensitivity	Tests Results			Retest Results			Follow-up Investigation
			Tank	Line	Cert.	Tank	Line	Cert.	
1/12/97	Line Test	0.1 GPH		PASS					
1/7/97	Line Test	0.1 GPH		PASS					Premium & Diesel
10/3/96	Cert	0.1 GPH			PASS				
8/23/95	Line/Cert	0.1 GPH		PASS	PASS				
1994	No Data Available								
6/22/93	Line/Cert	0.1 GPH		PASS	PASS				
7/29/92	Cert	0.1 GPH			PASS				
7/28/92	Full UST	0.1 GPH	PASS	PASS	PASS				
11/12/91	Helium Test	0.1 GPH		PASS					Premium Vent Line
5/30/91	Cert	0.1 GPH			PASS				
5/20/91	Cert	0.1 GPH			PASS				
5/26/90	Full UST	0.1 GPH	PASS	PASS	PASS				
3/22/90	Cert	0.1 GPH			PASS				
9/28/89	Cert	0.1 GPH			PASS				
7/19/88	Full UST	0.1 GPH	PASS	PASS	PASS				
1980 thru 1987	No Data Available								

Shell
5/12
#16